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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,430	11/17/2003	Haitao Wu	60282 00114	2727

32294 7590 02/01/2007
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EXAMINER

D AGOSTA, STEPHEN M

ART UNIT	PAPER NUMBER
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2617

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/01/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/713,430

Applicant(s)

WU ET AL.

Examiner

Stephen M. D'Agosta

Art Unit

2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-20 is/are allowed.
- 6) ☒ Claim(s) 1,9 and 21 is/are rejected.
- 7) ☒ Claim(s) 2-8 and 10-16 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 2 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim does not fully define “where” the third set of nodes is located (eg. within range of the first set? Second set? Elsewhere?).

Claim 21 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01.

The omitted elements are: “software instructions stored on a computer readable medium which are executed by the processors”. The processors described cannot perform the duties described without having some type of stored of software and/or procedures.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 9 and 21 rejected under 35 U.S.C. 103(a) as being unpatentable over Haas et al. "Dual Busy Tone Multiple Access (DBTMA) - A Multiple Access Control Scheme for Ad Hoc Networks" and further in view of Tanabe et al. US 5,884,171.

As per **claims 1, 9 and 21**, Haas teaches a method for enhancing fairness and performance in a multihop ad hoc network (Abstract), the method comprising:

providing information regarding a transmission between a first set of nodes of the network, wherein the information is provided to a second set of nodes in a range of two hops from the first set of nodes participating at the transmission (figure 1 shows a "first set" where "A" and "B" are communicating and node "H" can be viewed as a "second set/node two hops away from node A". Haas also teaches that "synchronization information" can be sent to node "H", see page 2, left column:

"..In this paper, we propose the dual busy tone multiple access (DBTMA) protocol. In DBTMA, we use the RTS packets to initiate channel request. Two out-of-band busy tones are then used to protect the RTS packets and the data packets, respectively. One of the busy tones, the transmit busy tone, BTt, which is set up by the RTS transmitter, is used to protect the RTS packets. Another busy tone, the receive busy tone, BT, which is set up by the receiver, acknowledges the RTS packet and provides continuous protection for the incoming data packets. Nodes sensing any busy tone defer from sending their RTS packets on the channel. With the use of the RTS packet and the BT, signal, the exposed terminals are able to initiate data packet transmissions. Furthermore, the hidden terminals can reply to RTS requests and initiate data packet reception, while data packet transmission is taking place between the transmitter and the receiver."; and

setting, after successfully finishing the transmission, a waiting time for the first set of nodes, in which the first set of nodes backoff from accessing a transmission medium (Haas teaches the CSMA/CA protocol which inherently sets backoff times for the "local" nodes, eg. as opposed to CSMA/CD which only detect collisions);

but is silent on providing "contention synchronization" information.

The examiner must give each claim its broadest reasonable interpretation and since "contention synchronization" could literally be anything (eg. it is not empirically defined), the examiner puts forth Tanabe who teaches:

"...According to the above construction, both a transmitting terminal and a receiving terminal transmit a busy tone on a control channel while they are in process of data communication. Another terminal which is ready to transmit data is supposed to check before data transmission that there is no busy tone transmitted, so that the terminal can start communication only when no terminal which is inside the checking terminal's communication range is in a communication process. As a result, HTP can be prevented.."
(C4, L10-18)

It would have been obvious to one skilled in the art at the time of the invention to modify Haas, such that contention synchronization is used, to provide means for alerting hidden terminals that they should not attempt to communicate with an in-range node that is currently communicating with another (out of range) node.

Allowable Subject Matter

Claims 17-20 allowed.

The prior art of record does not teach use of “black burst energy signals according to a mapping scheme” and their operation (see underlined below).

17. A Wireless Local Area Network node, wherein: the node is configured to back off using a random value uniformly chosen between 0 and CWmin before accessing a channel, when a packet arrives to a Medium Access Control Layer from a higher layer; the node is configured to generate a black burst energy signal according to a mapping scheme, when the node receives a Request-to-Send or Clear-to-Send not for itself, wherein the black burst energy signal is not sent if the node detects the channel is busy; the node is configured to receive the black burst energy signal and attempts to access the channel for limited times before an end point of a time indicated by the black burst energy signal, wherein these attempts are not added to retransmission times for the packet; the node is configured to start a backoff timer at the end point of the time indicated by the black burst energy signal by using a random value uniformly chosen between 0 and CWmin, while a contention window for the node is not reset, if the node detects the channel is idle, wherein only an earliest time point is used if more than one black burst energy signal is received; and the node is configured to wait for a time period after a successful transmission, before the channel is accessed again, wherein length of the time period comprises Clear-to-Send-handshaking and contention window, a time for a Request-to-Send/ a total backoff time of a minimum

Claims 2-8, 10-16 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

These claims recite use of the “black burst energy signal” novel material

Conclusion

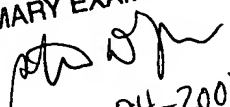
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. Kuan et al. US 7,130,289
2. Cervello et al. US 7,054,329
3. Sorrells et al. US 7,054,296
4. Whitehead US 5,732,077

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. D'Agosta whose telephone number is 571-272-7862. The examiner can normally be reached on M-F, 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Trost can be reached on 571-272-7872. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

STEVE M. D'AGOSTA
PRIMARY EXAMINER

01-04-2007